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ATTORNEY DOCKET NO.: 0492611-0513 (MIT 8853)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Cohen et al. Examiner:  
Serial No.: 10/667,956 Art Unit:  
Filing Date: September 22, 2003  
Title: METHODS AND APPARATUS FOR DETERMINING CARDIAC  
OUTPUT

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Sir:

TRANSMITTAL LETTER

Enclosed are the following documents:

1. Form PTO-1449 (3 pages);
2. Information Disclosure Statement (6 pages);
3. Cited Art (53 references); and
4. Return Postcard

If any additional fees are required to be paid or if any overpayment has been made, please charge same to Deposit Account No. 03-1721.

Respectfully submitted,

  
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Dated: June 4, 2004

3706036

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to: Commissioner For Patents, P.O. Box 1450, Alexandria, VA 22313

on 6-4-04  
Andrea Saccoccia



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Sir:

**STATEMENT**

Pursuant to the duty of disclosure under 37 C.F.R. §§1.56, 1.97 and 1.98, Applicant  
requests consideration of this Information Disclosure Statement.

**Type of Statement**

The present Information Disclosure Statement is:

An *original* Information Disclosure Statement; or  
 A *supplemental* Information Disclosure Statement.

**Certificate of Mailing**

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Date

*Sandra Saccoccia*  
Signature

Sandra Saccoccia

Typed or Printed Name of person signing certificate

Compliance with 37 CFR § 1.97

The present Information Disclosure Statement is being filed:

[X] Pursuant to 37 CFR § 1.97(b); no fee or certification is required:

[ ] Within three months of the filing date of a national application other than a continued prosecution application under § 1.53(d);

[ ] Within three months of the date of entry of the national stage as set forth in § 1.491 in an international application;

[X] Before the mailing of a first Office action on the merits; or

[ ] Before the mailing of a first Office action after the filing of a request for continued examination under § 1.114.

[ ] Pursuant to 37 CFR § 1.97(c) after the dates listed above but before the mailing date of any of a final action under § 1.113, a notice of allowance under § 1.311, or an action that otherwise closes prosecution in the application; Applicant hereby *either*:

[ ] Certifies that *either*:

[ ] each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement; or

[ ] That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the

knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in § 1.56(c) more than three months prior to the filing of the information disclosure statement.; or

- Includes herewith the fee set forth in § 1.17(p).
  - Pursuant to 37 CFR § 1.97(d), after the mailing date of any final action under § 1.113, a notice of allowance under § 1.311, or an action that otherwise closes prosecution in the application; Applicant hereby *both*:
  - Certifies that *either*:
    - each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement; or
    - That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in § 1.56(c) more than three months prior to the filing of the information disclosure statement.; and

[ ] Includes herewith the fee set forth in § 1.17(p).

Content of the Information Disclosure Statement

Applicant hereby makes of record in the above-identified application the reference(s) listed on the attached form PTO-1449 (modified). The order of presentation of the references should not be construed as an indication of the importance of the references.

Applicant includes copies of references as indicated below:

[X] A copy of each cited reference not indicated with an asterisk is included;

[ ] Copies of references indicated with an asterisk on the attached form PTO-1449 are not included pursuant to 37 CFR § 1.98(d) because they were previously provided to the United States Patent Office in an Information Disclosure Statement that complies with 37 CFR § 1.98(a)-(c) and was submitted in the following patent application that is relied upon in the present case for an earlier effective filing date under 35 USC § 120:

Serial Number	Filing Date	Status

[ ] Copies of English translations of one or more non-English references are included.

Applicant hereby makes the following additional information of record in the above-identified application:

Applicant certifies that the Information Disclosure Statement *either*:

[X] Does not contain non-English language citations;

[ ] Does contain non-English language citations, of which the following is a concise

explanation:

[ ] Includes one or more translations of a non-English citation.

Remarks

The submission of this Information Disclosure Statement should not be construed as a representation that a search has been made.

The submission of this Information Disclosure Statement shall not be construed to be an admission that the information cited in the statement is, or is considered to be, material to patentability as defined in § 1.56(b).

The submission of this Information Disclosure Statement shall not be construed as a representation that the information cited in the Statement is, or is considered to be, in fact, prior art as defined by 35 U.S.C. §102.

It is respectfully requested that:

1. The Examiner consider completely the cited information, along with any other information, in reaching a determination concerning the patentability of the present claims;
2. The enclosed form PTO-1449 be signed by the Examiner to evidence that the cited patent(s) and publication(s) has (have) been fully considered by the Patent and Trademark Office during the examination of this application; and
3. The citations for the patent(s) and publication(s) be printed on any patent which issues from this application.

Notwithstanding any statements by Applicants, the Examiner is urged to form his or her own conclusions regarding the relevance of the cited reference(s).

Respectfully submitted,

Dated: 6-4-04



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**INFORMATION DISCLOSURE STATEMENT**  
*(Use several sheets if necessary)*
ATTY. DOCKET:  
0492611-0513  
(MIT 8853)IN RE  
APPLICATION NO.:  
10/667,956

APPLICANT: Cohen, et al.,

FILING DATE: September 22, 2003 GROUP:

**U.S. PATENT DOCUMENTS**

Examiner 's Initials	U.S. Patent No.	Applicant	Issue Date	Class	Subclass
/MB/	6,485,431	Campbell	November 26, 2002	600	526
/MB/	6,368,284	Bardy	April 9, 2002	600	508
/MB/	5,535,753	Petrucelli et al.	July 16, 1996	128	672
/MB/	5,423,322	Clark et al.	June 13, 1995	128	672
/MB/	5,400,793	Wesseling	March 28, 1995	128	672
/MB/	5,183,051	Krajin et al.	February 2, 1993	128	687
/MB/	5,101,828	Welkowitz et al.	April 7, 1992	128	668
/MB/	4,429,701	Goor et al.	February 7, 1984	128	713

**U.S. PATENT APPLICATIONS**

Examiner 's Initials:	Publication Number:	Applicant:	Publication Date:	Group:	Art Unit:

**FOREIGN PATENT DOCUMENTS**

Examiner 's Initials	Document No.	Country	Date	Translation	
				Yes	No

**OTHER DOCUMENTS**

Examiner 's Initials	Citation (Including Author, Title, Date, Pertinent Pages, Etc.)
/MB/	Aboy, et al., "Automatic Detection Algorithm for Physiologic Pressure Signal Components", <i>Proc. 2nd Joint EMBS/BMES Conference</i> 2002: 196-197.
/MB/	Antonelli, et al., "Wavelet Transform Analysis of the Arterial Pressure Signal", <i>Computers in Cardiology</i> , 1994: 568-571.
/MB/	Antonutto, et al., "Assessment of Cardiac Output from Noninvasive Determination of Arterial Pressure Profile in Subjects at Rest", <i>Eur. J. Appl. Physiol.</i> 69: 183-188, 1994.
/MB/	Appel, et al., "Beat-to-Beat Variability in Cardiovascular Variables: Noise or Music?", <i>J. Am. Coll. Cardiol.</i> , 14: 1139-1148, 1989.
/MB/	Bourgeois, et al., "Characteristics of Aortic Diastolic Pressure Decay with Application to Continuous Monitoring of Changes in Peripheral Resistance", <i>Circ. Res.</i> , 35: 56-66, 1974.
/MB/	Bourgeois, et al., "Continuous Determination of Beat-to-Beat Stroke Volume from Aortic Pressure Pulses in the Dog", <i>Circ. Res.</i> , 39(1): 15-24, 1976.

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(Use several sheets if necessary)

APPLICANT: Cohen, et al.,

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/MB/	Brubakk, A., "Use of Simulation Model for Estimating Cardiac Output from Aortic Pressure Curves", <i>Med &amp; Biol. Eng. &amp; Comput.</i> , <b>16</b> : 697-706, 1978.
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/MB/	Martin, et al., "Application of Pattern Recognition and Image Classification Techniques to

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/MB/	Determine Continuous Cardiac Output from the Arterial Pressure Signal", <i>IEEE Trans. Biomed. Eng.</i> , 41(10): 913-920, 1994.
/MB/	McDonald, D.A., "Left Ventricular Output Derived from the Time-Derivative and Phase Velocities of the Aortic Pressure Wave", <i>Med. Biol. Eng.</i> , 11(6): 678-690, 1973.
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/MB/	Welkowitz, et al., "Noninvasive Estimation of Cardiac Output", <i>IEEE Trans. Biomed. Eng.</i> , 38(11): 1100-1105, 1991.
/MB/	Wellstead, et al., "Least-Squares Identification of Closed-Loop Systems", <i>Int. J. Control.</i> , 21(4): 689-699, 1975.
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EXAMINER	/Mark Bockelman/	DATE CONSIDERED	03/03/2008
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EXAMINER: Initial if citation considered, whether or not citation is in conformance with MPEP 609; Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.